

FIG.- 1



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Target DNA completely homologous

FIG._2A

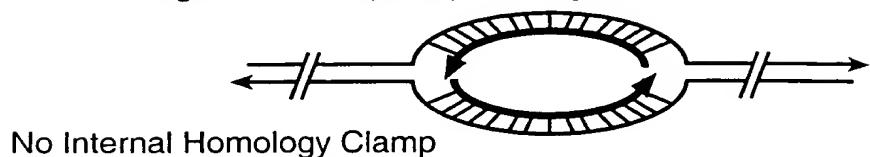


FIG._2B

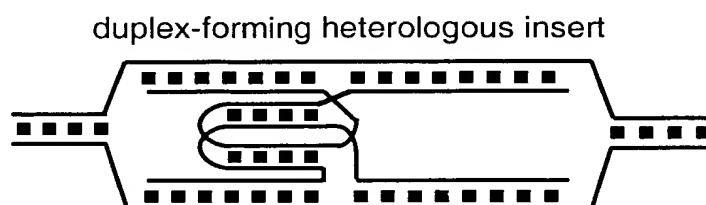


FIG._2C

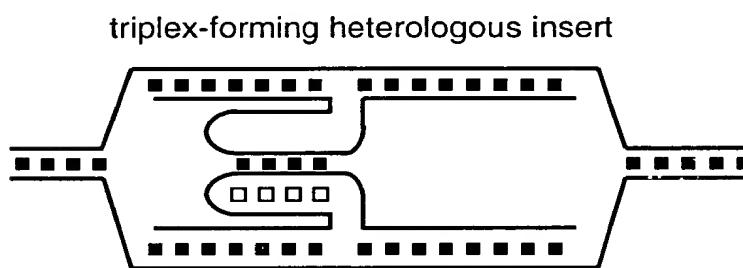


FIG._2D

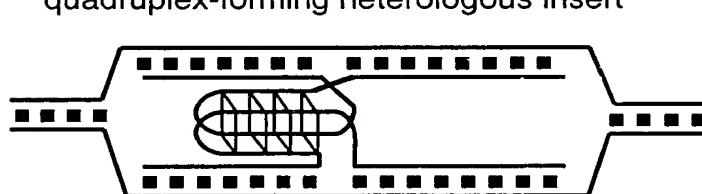


FIG._2E

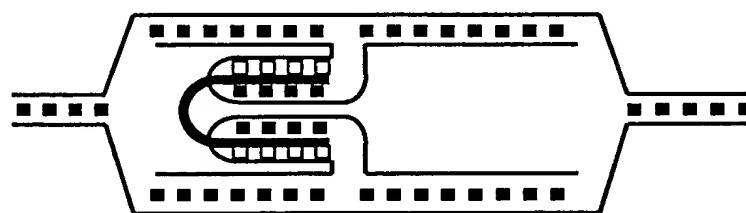
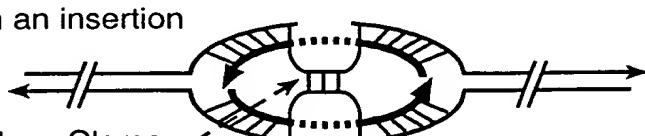


FIG._2F

Target DNA with an insertion

Internal Homology Clamp
formed by dsDNA target



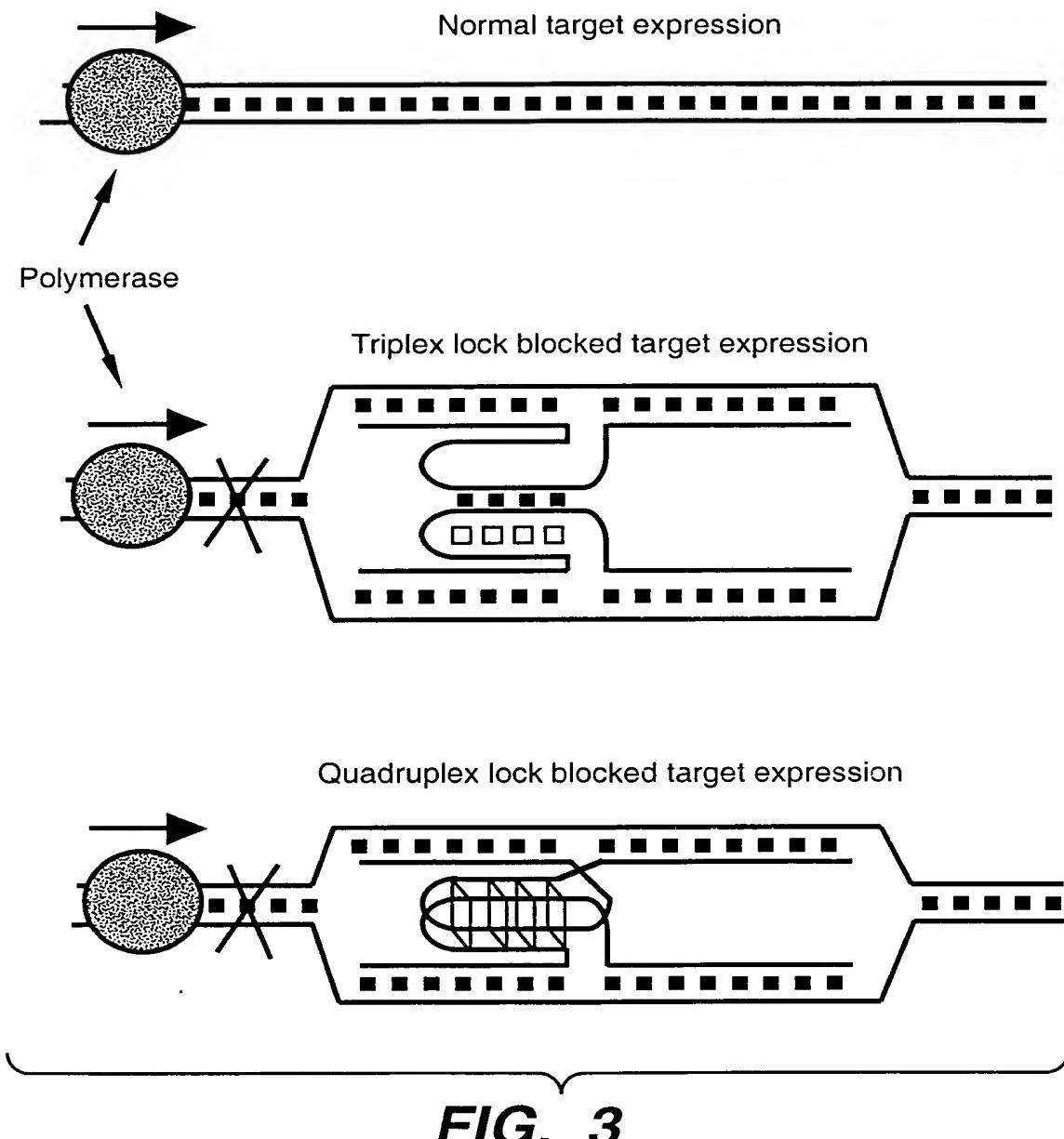
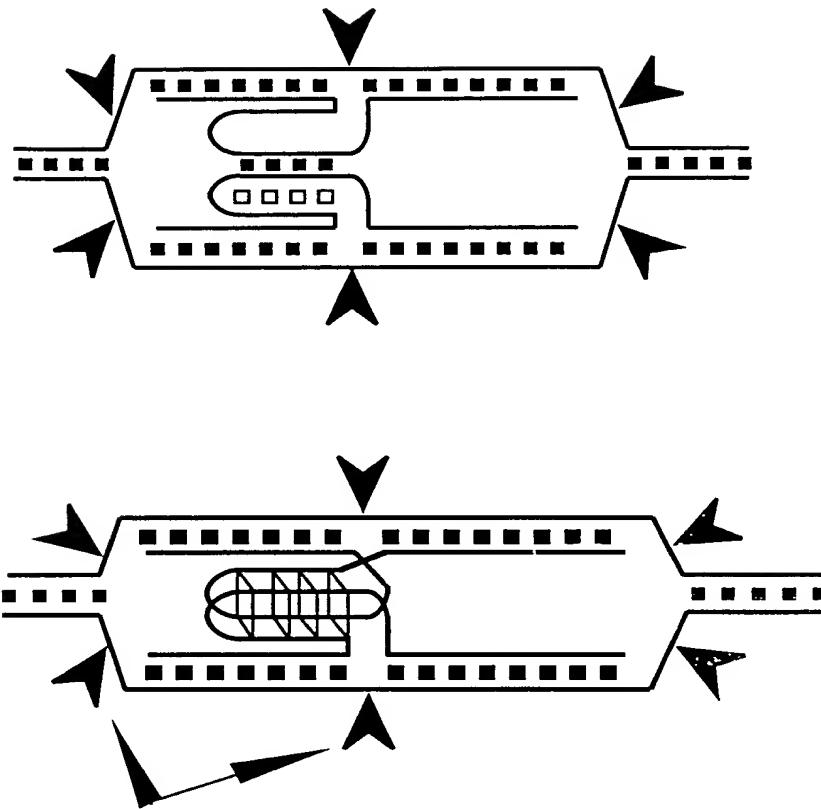


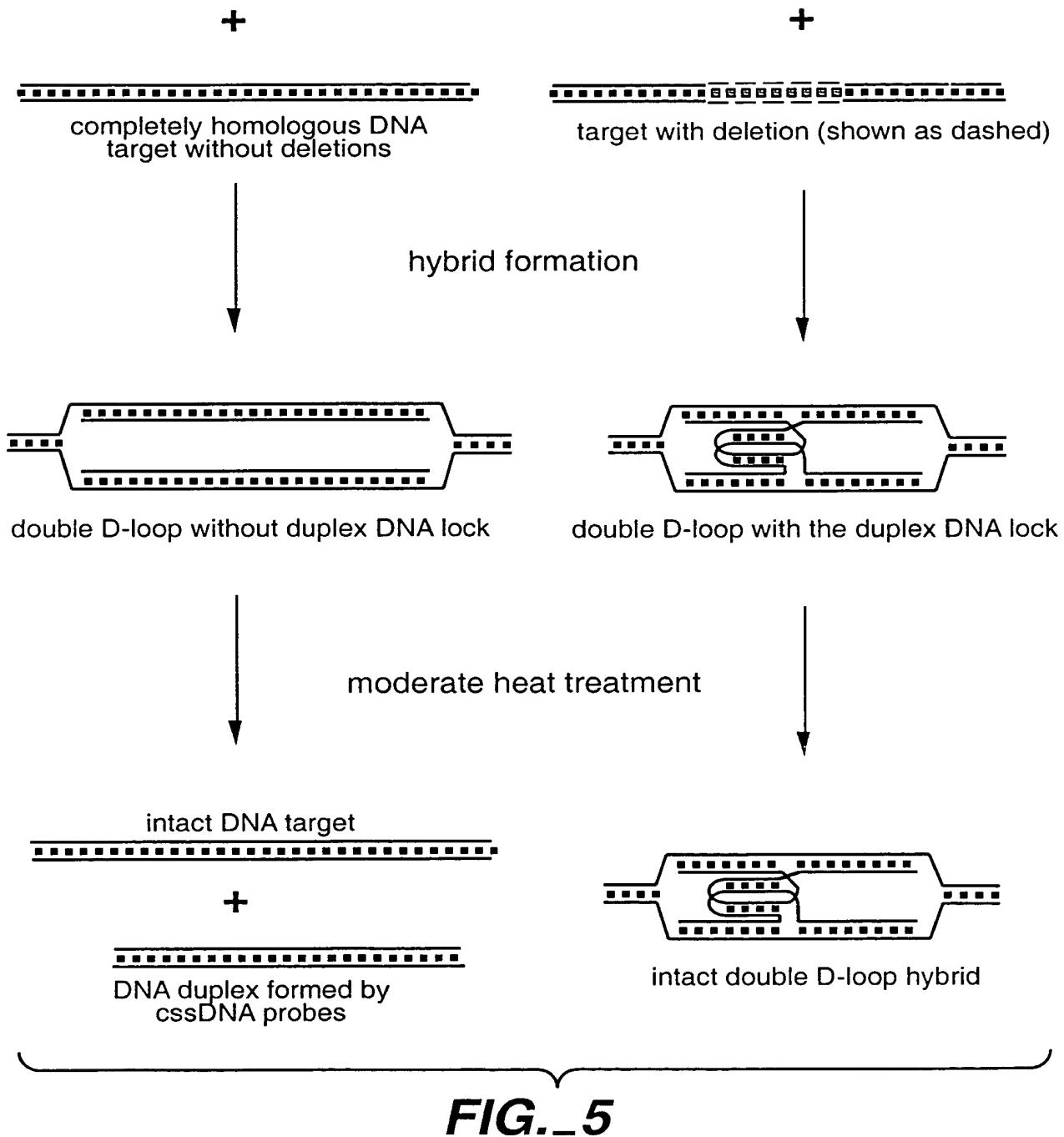
FIG..3



Hybrid recognition by
nucleic acid repair,
nucleic acid recombination,
and resolution enzymes

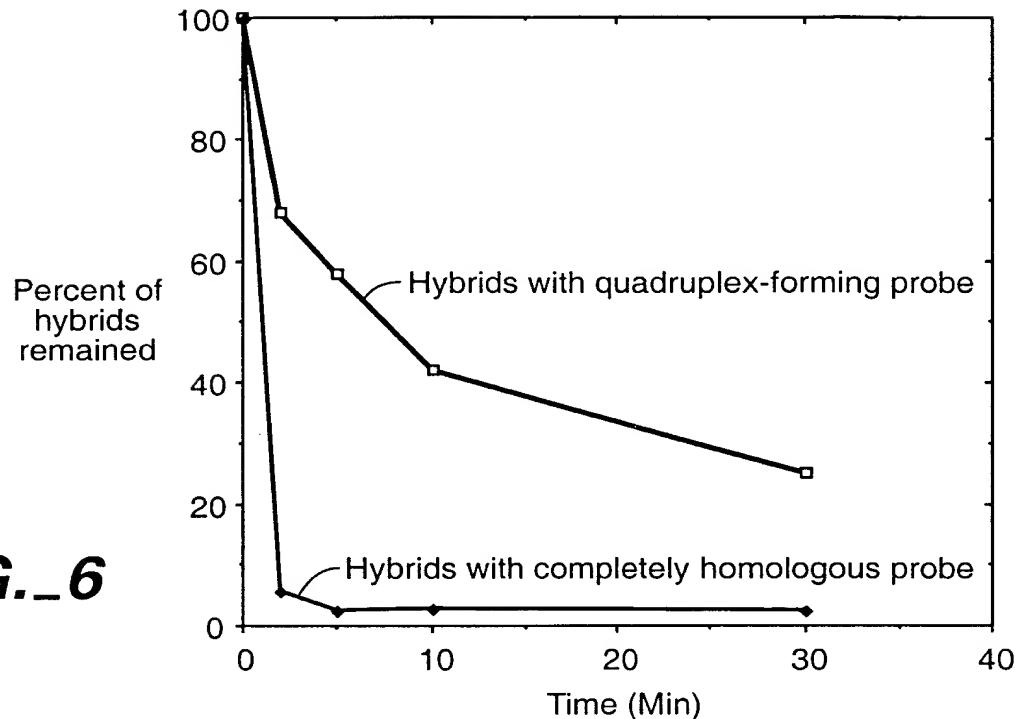
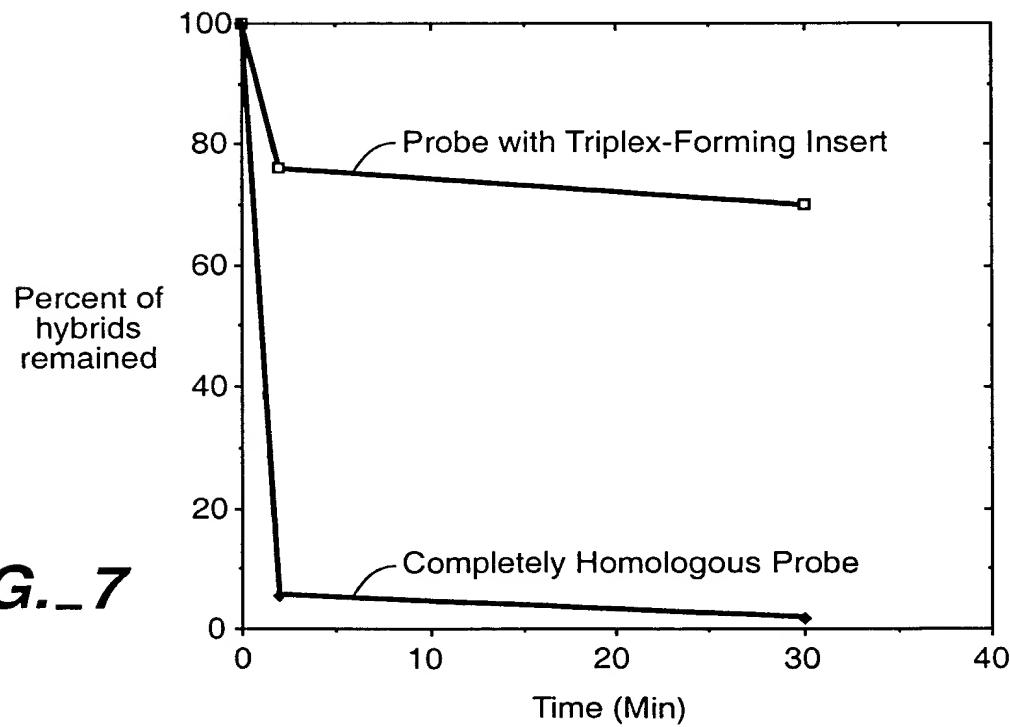
FIG._4

cssDNA probes





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**FIG._6****FIG._7**

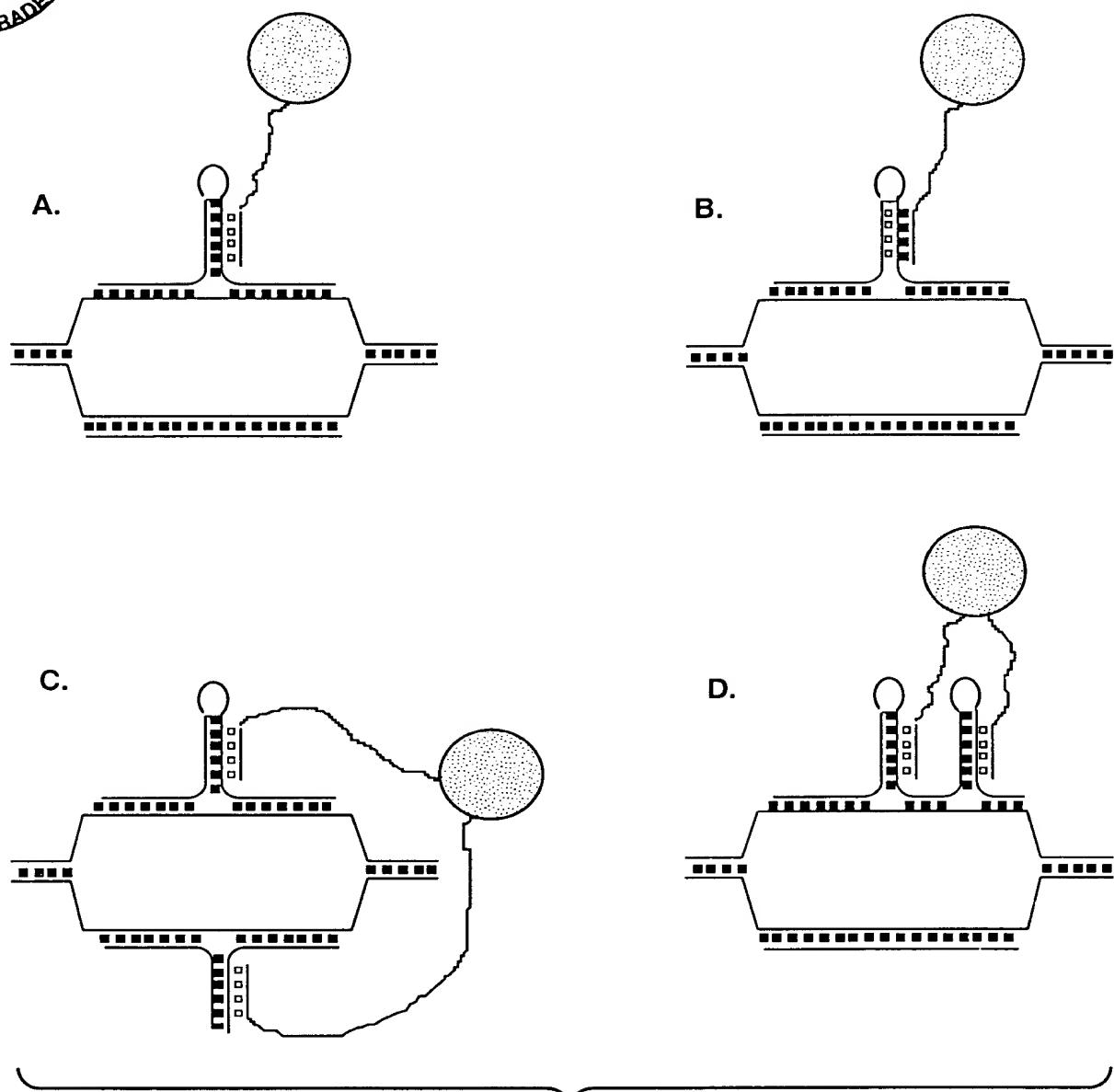


FIG._8A



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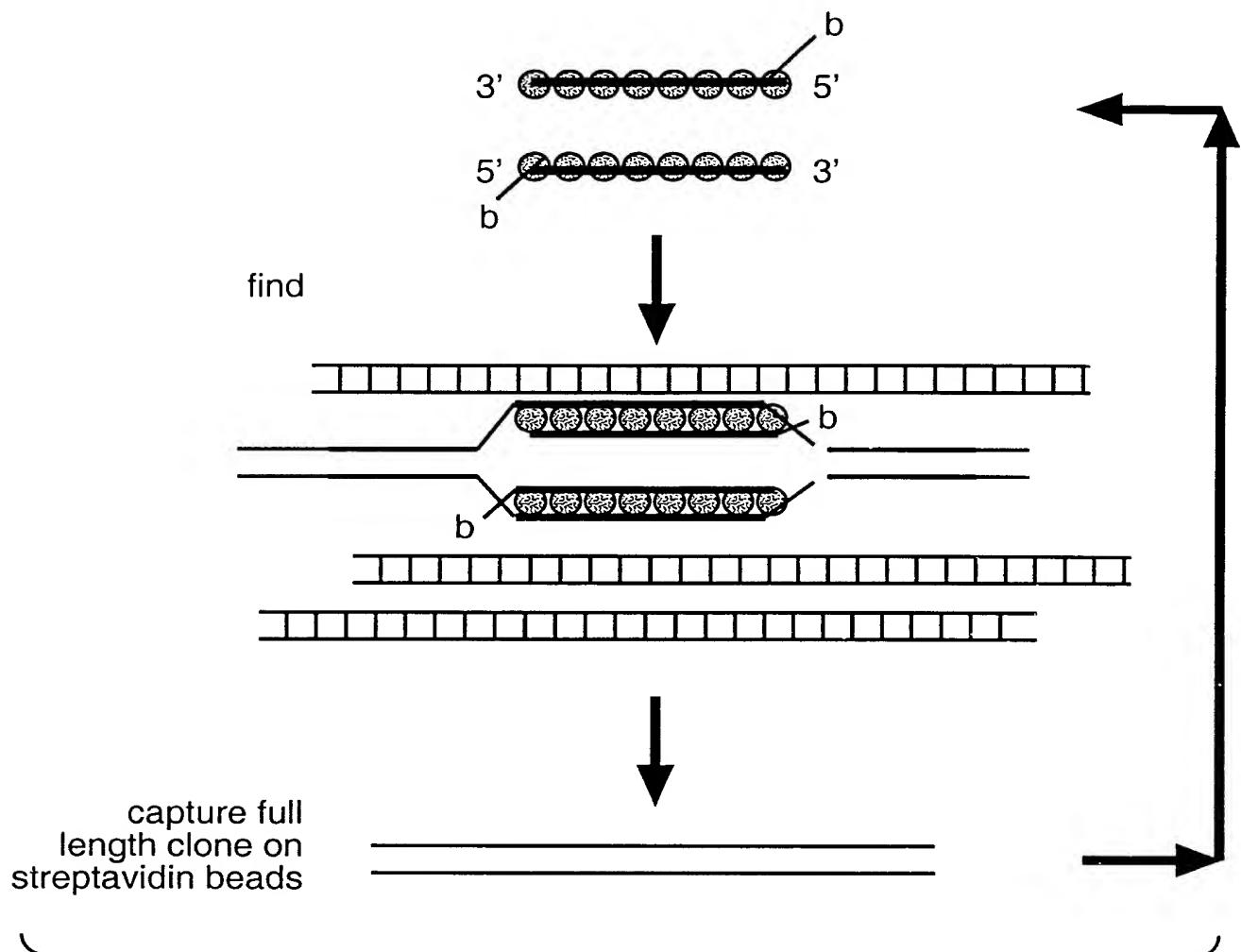


FIG._8B

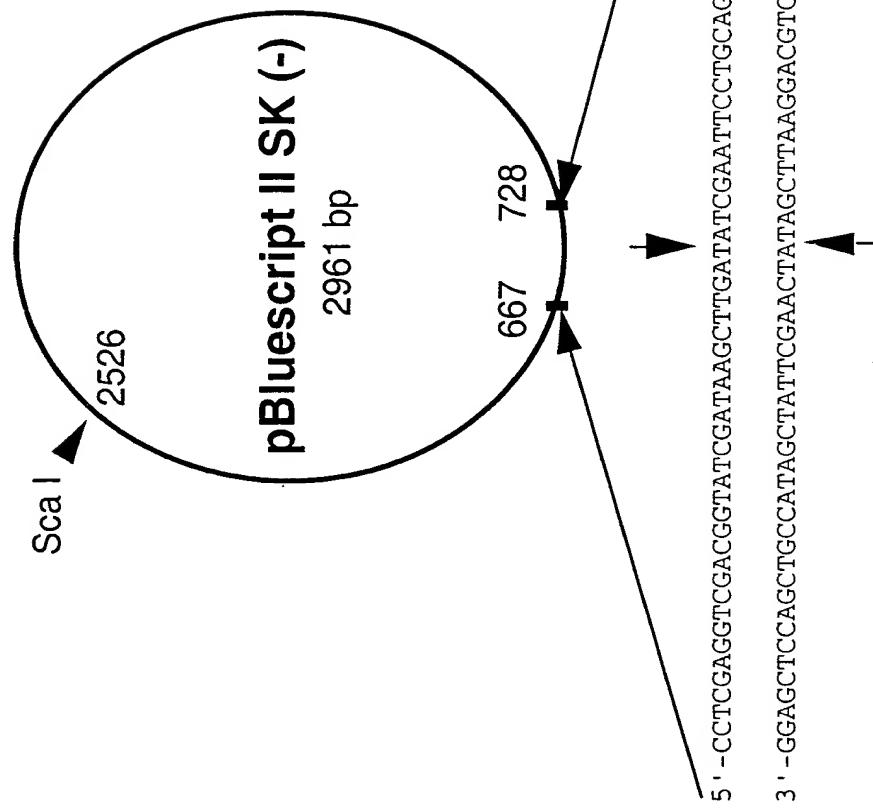


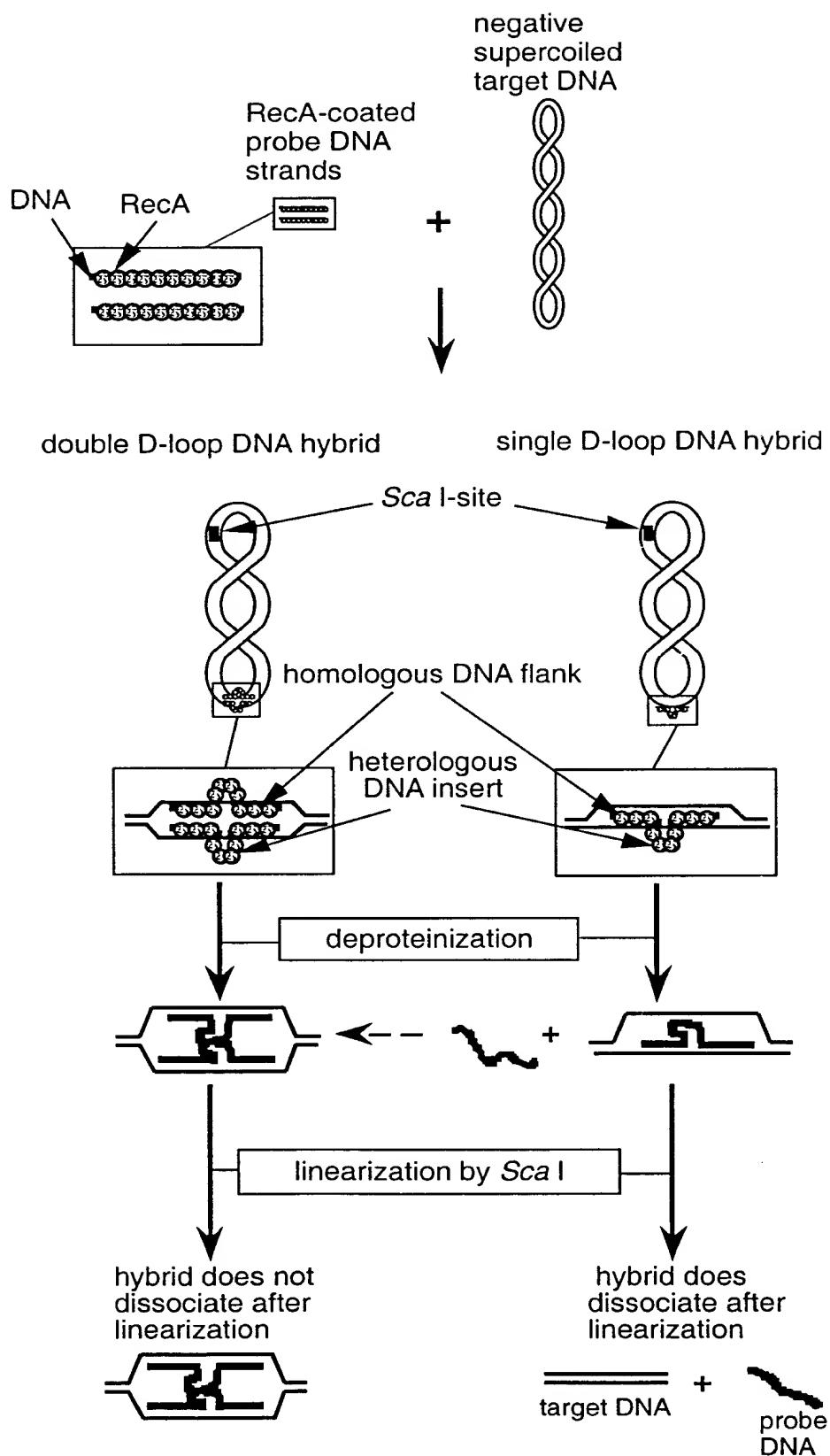
FIG._ 9A

5' -CCTCGAGGTGACGGTATCGATAAGCTTGATTCGAAATTCTGCAGCCGGGGATCCACTA-3' **Ql_w**
3' -GGAGCTCCAGCTGCCATAGCTATTGAACTATAGCTTAAGGACGTGGCCCTAGGTGAT-b **Zl_c**

FIG._ 9B

5' -CCTCGAGGTGACGGTATCGATAAGCTTGATTTGGGGTTGGGGTTATGAATTCTGCAGCCCCGGGGATCCACTA-3' **Ql_w**
3' -GGAGCTCCAGCTGCCATAGCTATTGAACTATAGCTTAAGGACGTGGCCCTAGGTGAT-b **Zl_c**

FIG._ 9C

**FIG._ 10**

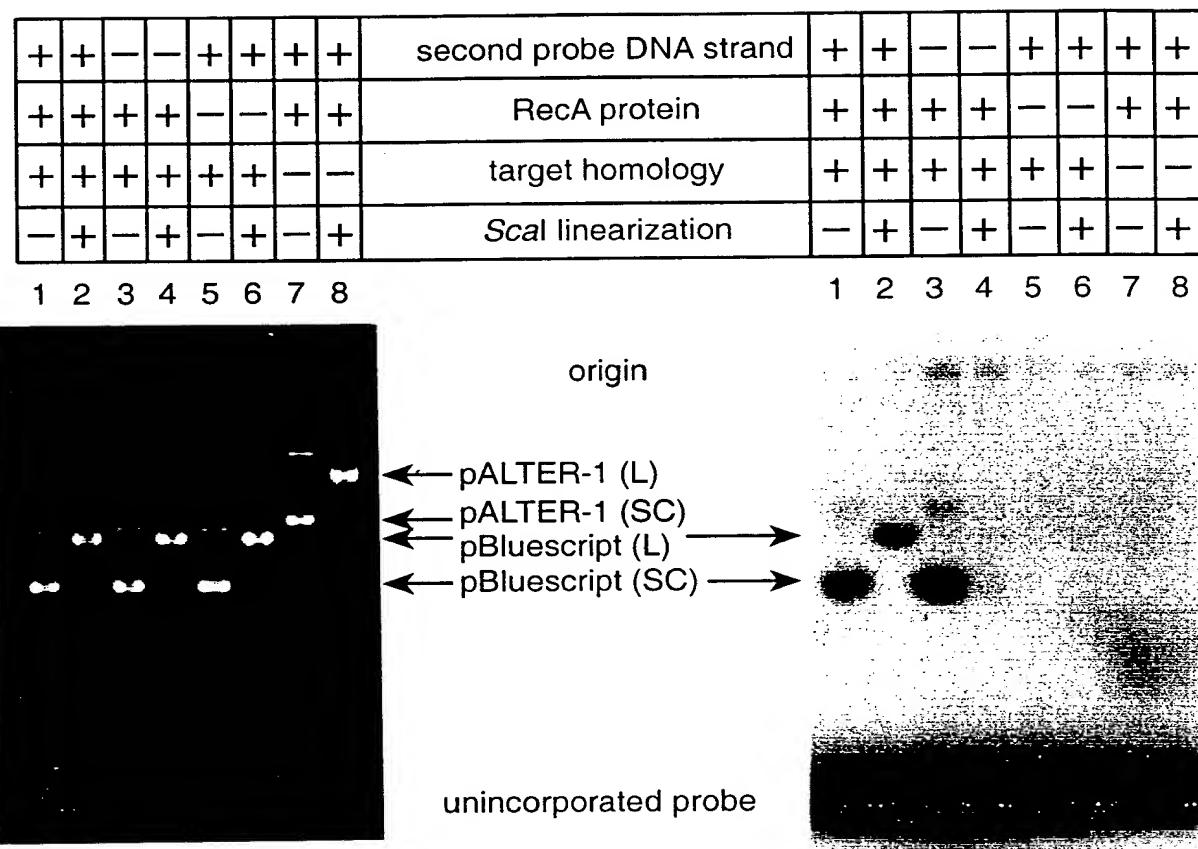
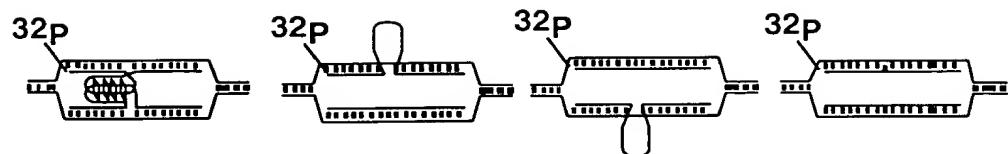


FIG._ 11

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32P-labeled probe strand

unlabeled probe strand

incubation at 65°C (min.)

lane

QI_w	QI_w	NI_w	NI_w								
QI_c	NI_c	QI_c	NI_c								
0	2	10	20	0	2	10	20	0	2	10	20

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

origin



linear hybrid →



unincorporated probe



FIG._ 12A



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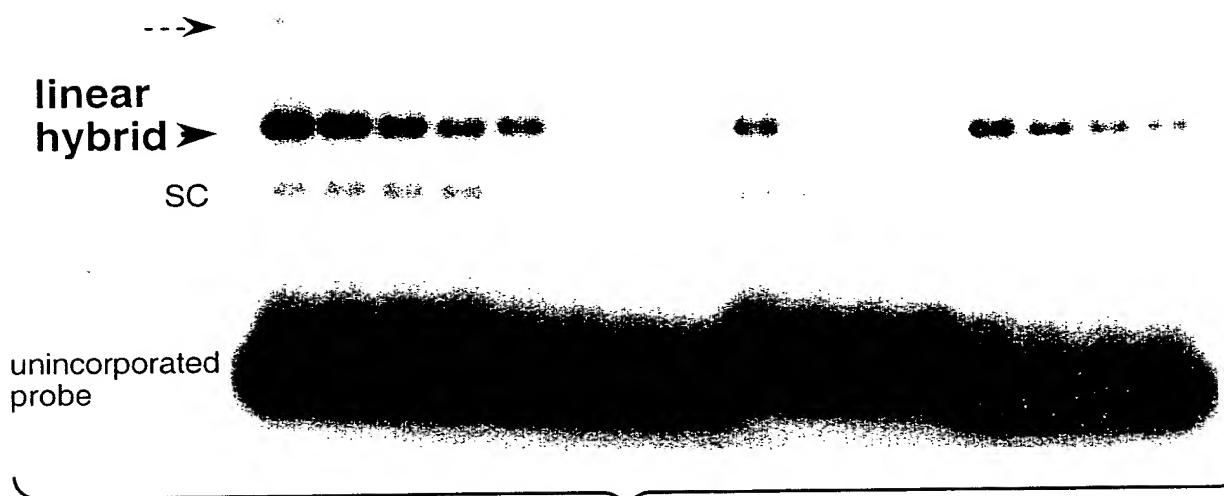
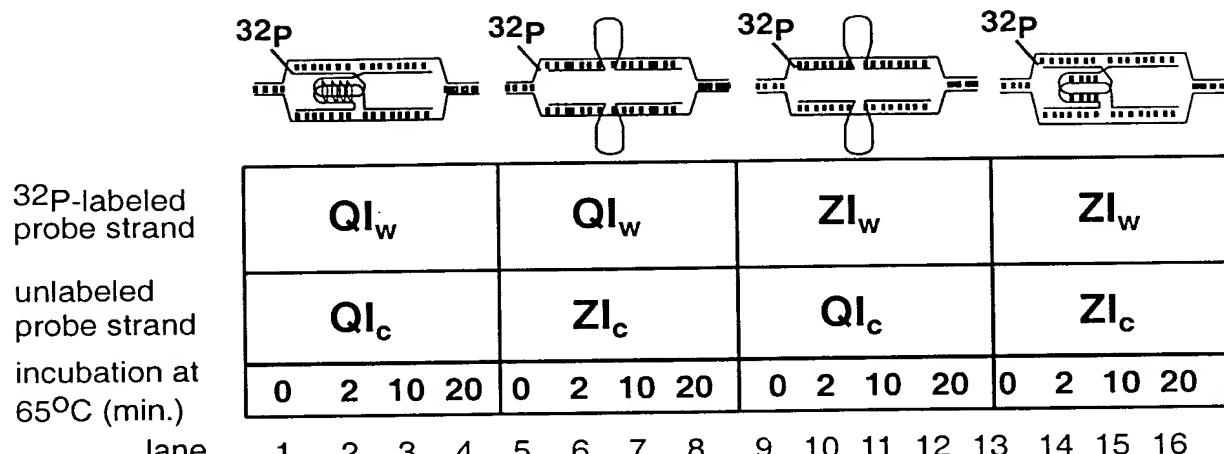
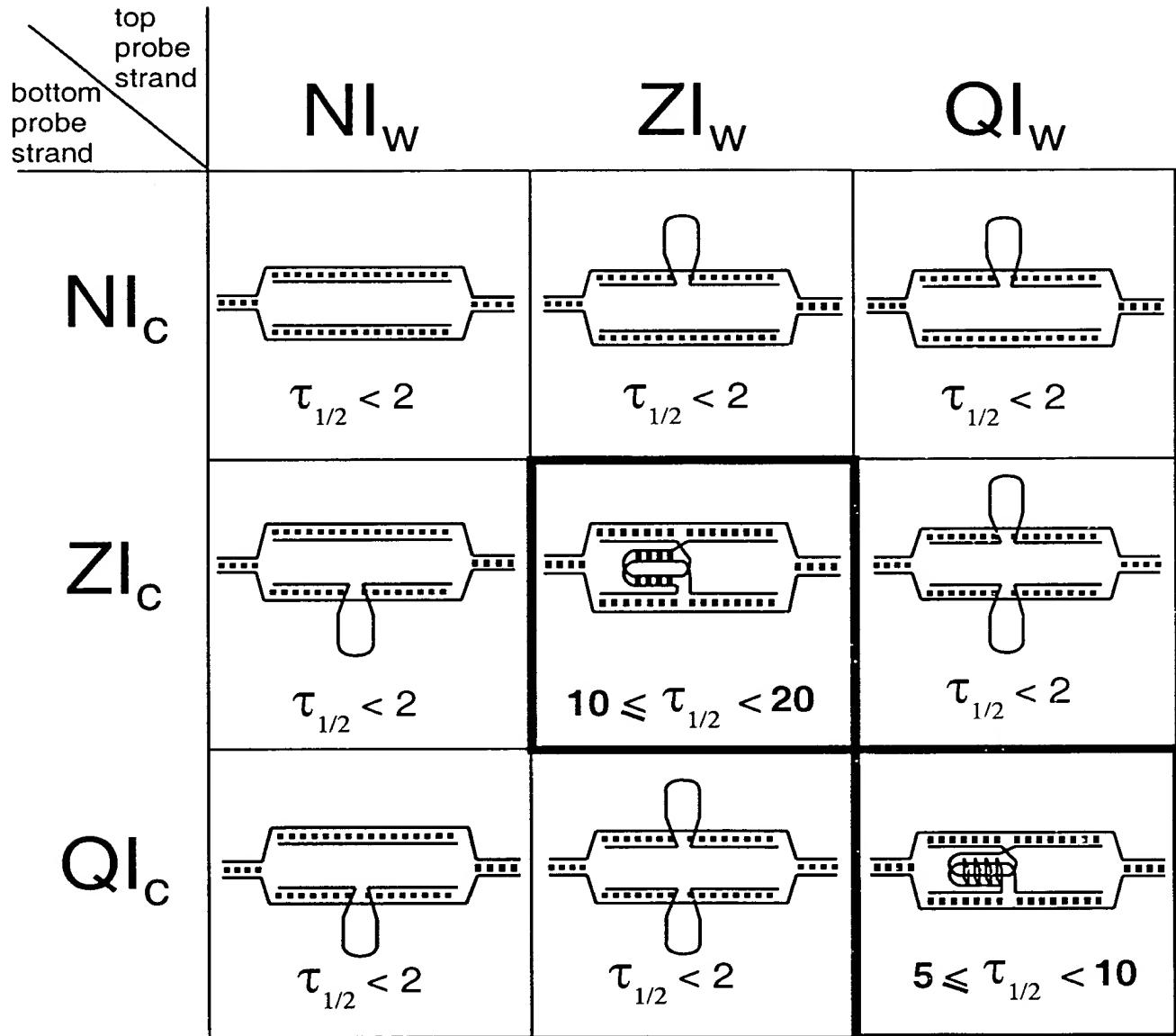


FIG._ 12B



NI = No DNA Insert

ZI = Z-DNA forming Insert

QI = Quadruplex-DNA forming Insert

w = Watson DNA strand

c = Crick DNA strand

$\tau_{1/2}$ = double D-loop DNA hybrid apparent half-life time (min.)

FIG._ 13



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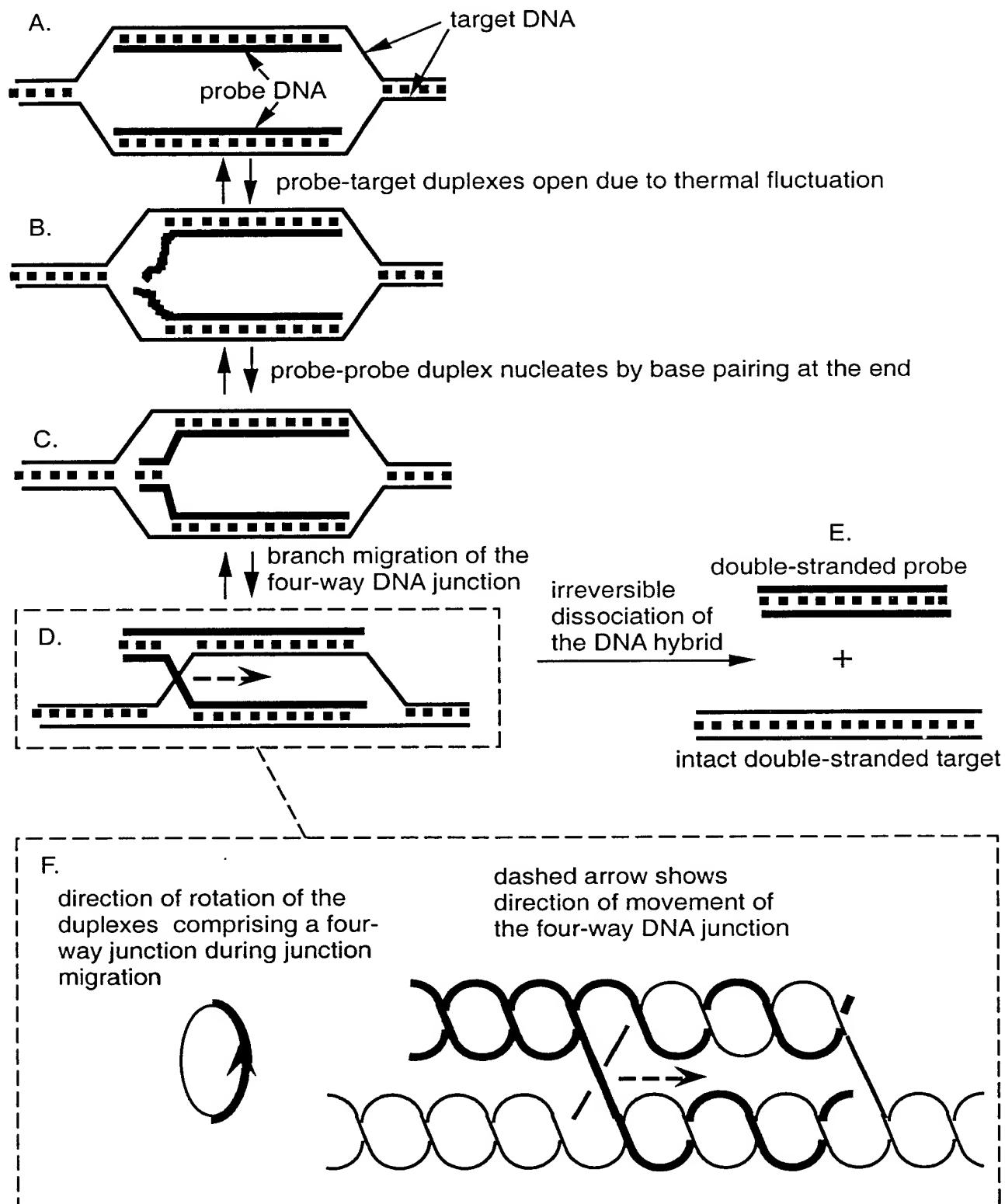


FIG.. 14



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FIG._ 15A

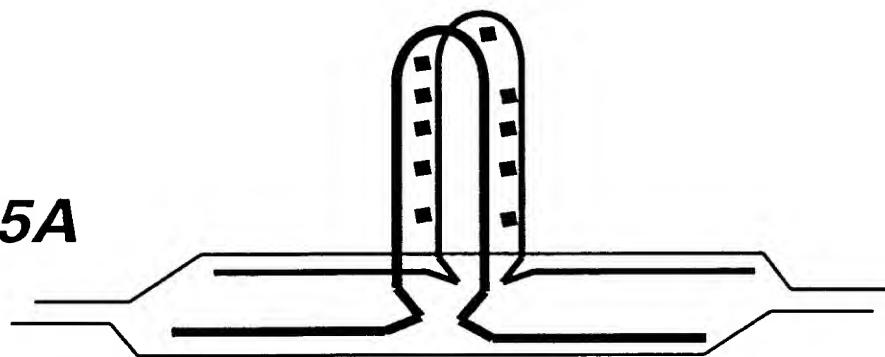
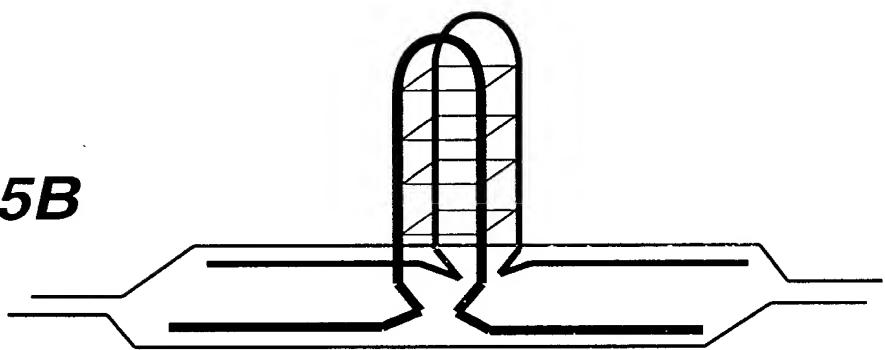


FIG._ 15B



pTL

PCR
631 PCR
740

Hind III 689 701 EcoR I

5' -AGCTT**CCCTCCTCCCTCCC**TAATACCCACCCACCACCCG-3'
3' -AGGGAGGAGGGAGGGATTATGGGGTGGGTGGGCTTAA-5'

triplex-forming insert

FIG._ 16



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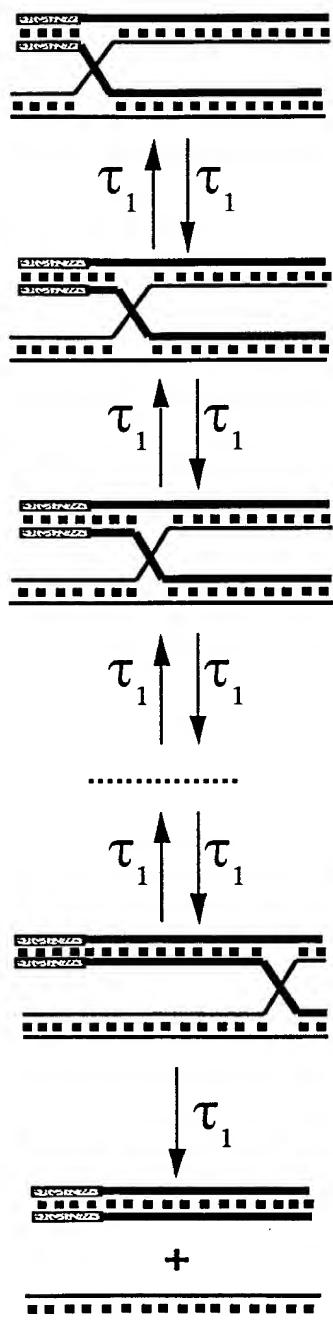


FIG._ 17A

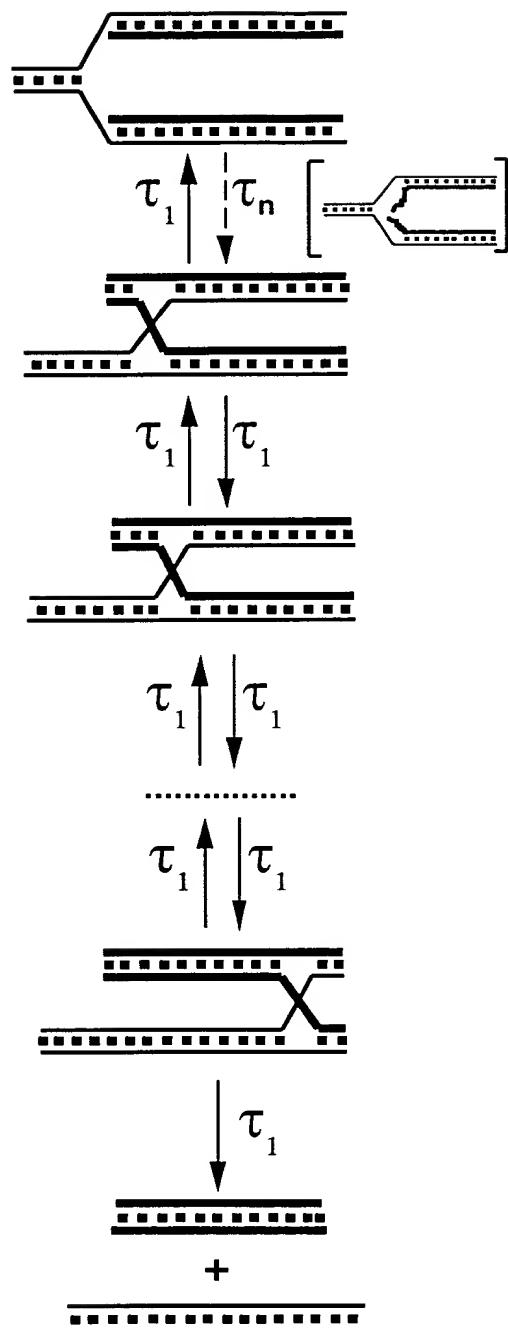


FIG._ 17B

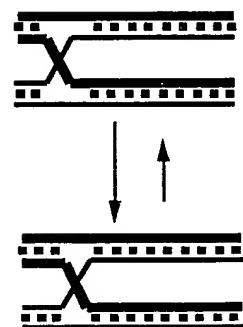
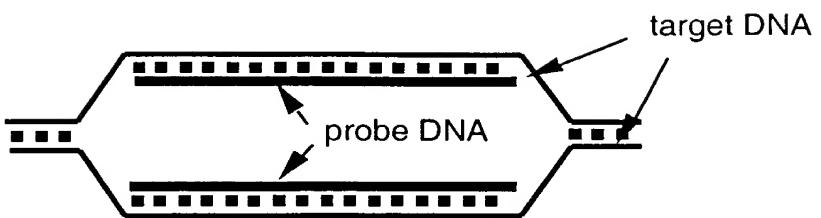


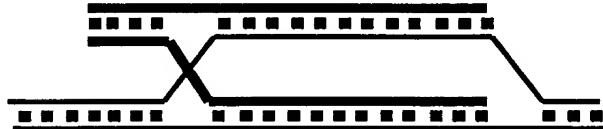
FIG._ 17C



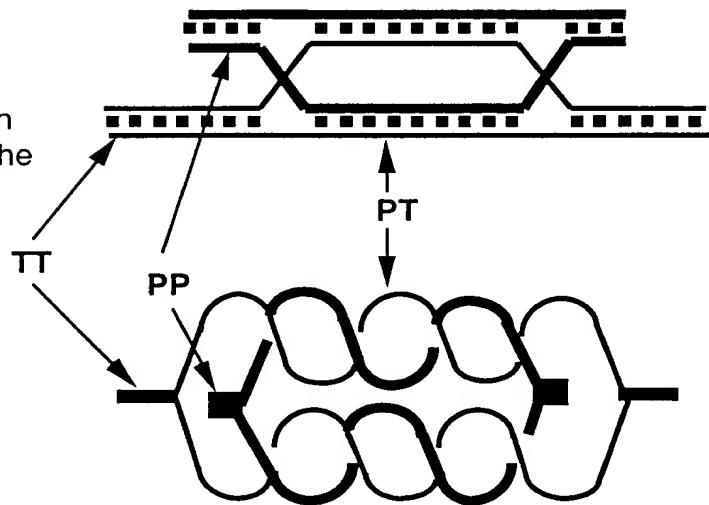
A: Double D-loop DNA without nucleation of the probe-probe duplex



B: Double D-loop DNA with single nucleation (sn) of the probe-probe duplex



C: Double D-loop DNA with double nucleation (dn) of the probe-probe duplex

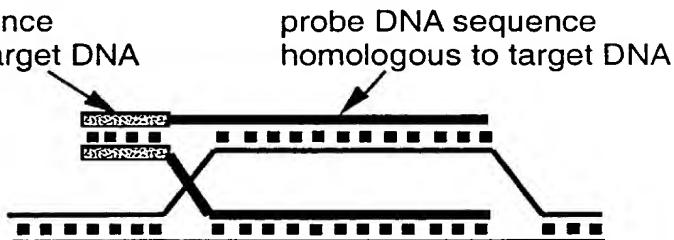


TT = target-target DNA duplex

PP = probe-probe DNA duplex

PT = probe-target DNA duplex

D: Double D-loop DNA with irreversible single nucleation of the probe-probe duplex at one end





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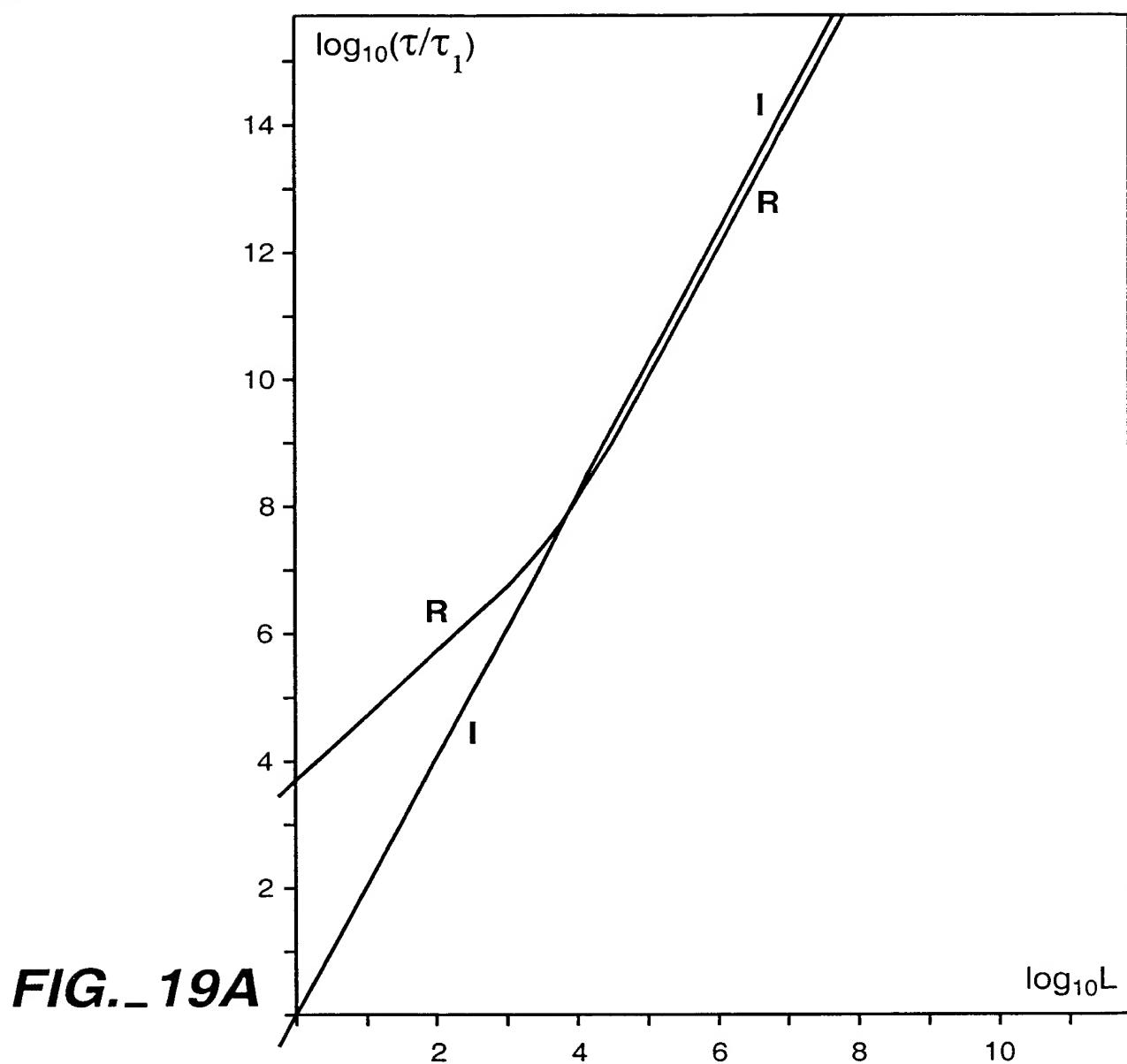


FIG._19A

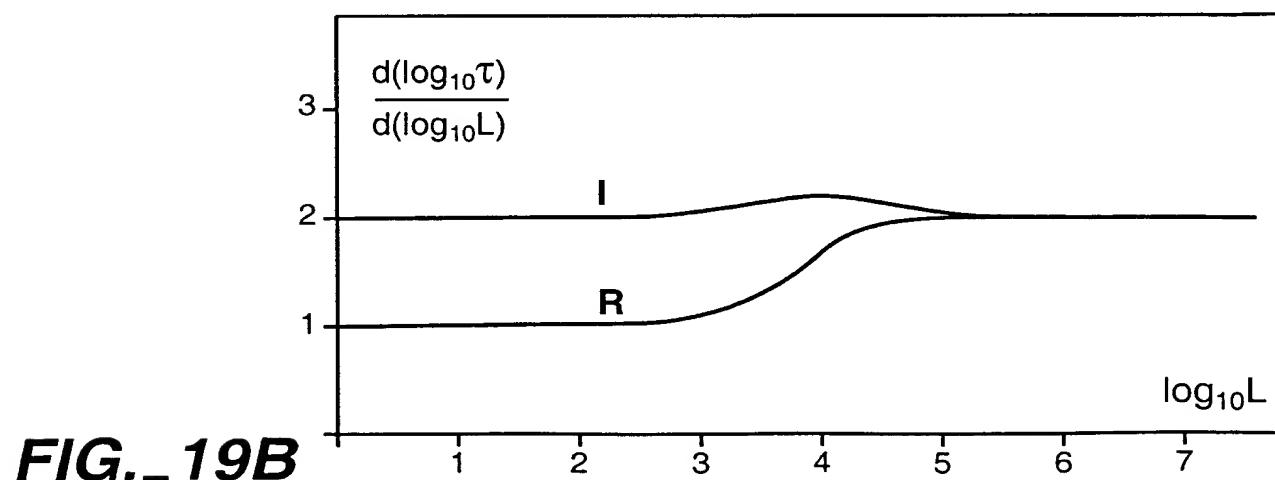


FIG._19B



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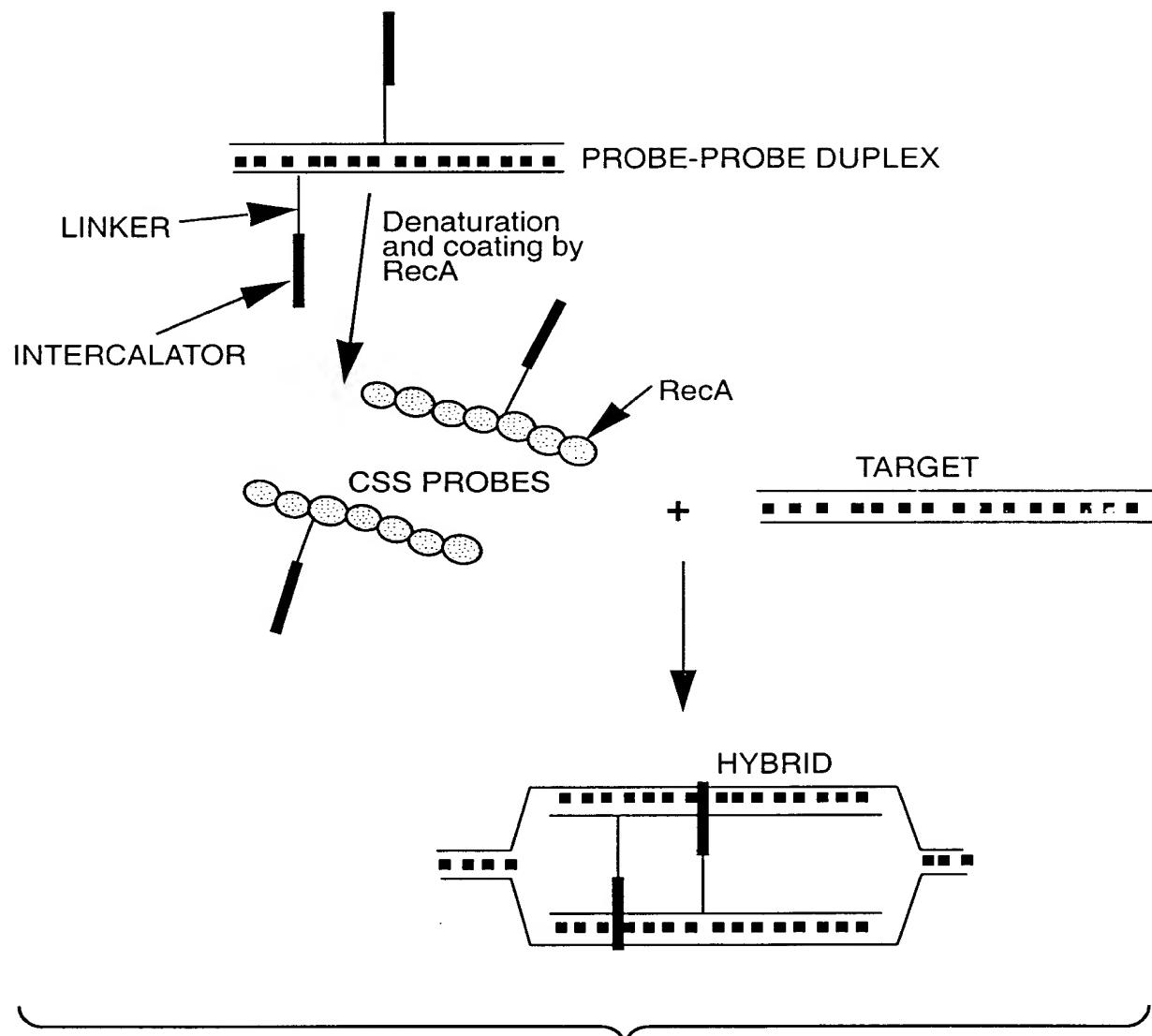


FIG..20